Reg. No. : | | | | | | | | | | |

Question Paper Code: 39055

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Elective

Electronics and Instrumentation Engineering

01UEI908 - ROBOTICS AND AUTOMATION

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Find the spatial resolution of sliding joints with a full range of 0.5m and 8-bit storage capacity?
2. What is meant by gearing ratio?
3. Draw the functional blocks of machine vision system.
4. Define Robot manipulators.
5. Name various end-effectors of the robot that are used for industrial applications.
6. Give the basic types of robot programming languages.
7. Compare forward and reverse kinematics.
8. What are the methods of robot programming?
9. What is meant by assembly and its configuration?
10. What are the factors to be considered for selection of robot?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the working of any two robot actuators with neat sketches. (16)

Or

(b) What are the types of drives used to be in industrial robots. (16)

12. (a) Derive an expression for the rotation of robot arm in Denavit–Hartenberg representation. (16)

Or

(b) Explain the image processing analysis made by robot vision techniques. (16)

13. (a) Explain in detail about the rotating co ordinate systems of robot arm dynamics. (16)

Or

(b) Explain in detail about various actuating mechanisms of mechanical actuator with neat sketch. (16)

14. (a) Discuss in detail about the general considerations adopted in robot material handling. (16)

Or

(b) With the neat diagram, explain how robots are very useful in Chemical and Nuclear plants. (16)

15. (a) Explain briefly about Parts Presentation methods for robotic assembly automation. (16)

Or

(b) Illustrate the operations of robots in manufacturing industrial applications. (16)